

REMARKS

This is a full and timely response to the outstanding Final Office Action mailed August 12, 2005, wherein claims 1 - 23 remain pending. The Examiner is thanked for the thorough examination of this application and the continued allowance of claims 11-23 (and the indication that claims 7 and 10 contain allowable subject matter).

Applicants submit that claims 1-6, 8 and 9 are clearly in condition for allowance, as will be disclosed below. Applicants present the remarks below in an effort to further point out distinctions to the Examiner at this time, in hopes of avoiding an unnecessary appeal process for this case. The accompanying remarks are necessary in light of the position taken in the Final Office Action. The remarks of the instant response further clarify and distinguish Applicants' invention over Office Action's grounds of rejection and supporting reasoning presented in the Final Office Action.

Rejections under 35 U.S.C. 102

The Office Action indicates that claims 1-2, 4-5, 8 are rejected under 35 U.S.C 102(e) as allegedly anticipated by *Qian et al.* (U.S. Patent No. 6,699,399). Moreover, in the "Response to Arguments" section of the Final Office Action, the Final Office Action states that "*Qian et al.* clearly teaches in col. 3, lines 48+, col. 6, lines 24+, cleaning process to be performed...such a degree as to induce lateral etching on the next film (selectivity between layer (22) and layer (24), i.e. layer (22) etched faster than etching layer)." With respect to the remaining claims, Applicants respectfully traverse the rejection.

With respect to *Qian*, *Qian* discloses substrate process methods, in which etchant gas is provided in the chamber while providing a cleaning gas (see col. 3, lines 48 to col. 6, lines 24). That is, cleaning process disclosed by *Qian* is performed during etching (i.e. the cleaning and the etching are simultaneously performed), rather than between etchings, as the Office Action asserted.

Moreover, in the background of *Qian*, *Qian* discloses that attempting to remove the etchant residue **during the etching process** results in substantially lowering the etching selectivity ratio of the layer (22) and the layer (24) (see Figs. 1a-1d and col. 2, lines 39-67). Logically, the etchant residue may not induce lateral etching on the underlying layer if no cleaning be performed during etching. That is, the lateral etching is induced by cleaning during etching, rather than formation of the etchant residue. In fact, *Qian* discloses substrate process methods in which cleaning can be performed during/while etching without lowering the etching selectivity ratio of these layers. *Qian*, however, does not disclose or teaches that cleaning process is performed before the polymer layer form on the sidewalls of the feature such a degree as to induce lateral etching on the next film, as the Examiner asserted.

Additionally, the Office Action apparently interprets the “next film” language of claim 1 as an underlying film. In fact, claim 1 clearly recites “providing a plurality of substrates, in which a film to be etched and an overlying masking pattern layer are provided overlying each substrate” and “an intermediary cleaning process is performed in the plasma chamber between the etchings before the deposited polymer layer reaches such a degree as to induce lateral etching on the next film to be etched”. That is, the next film to be etched implies that a film to be etched formed on another/the next substrate to be fabricated, rather than an underlying film to be etched on the same substrate.

Turning now to claim 1, that claim specifically recites:

1. A semiconductor process for controlling etching profile, comprising the steps of:
providing a plurality of substrates, in which a film to be etched and an overlying masking pattern layer are provided overlying each substrate; and
etching each of the films in sequence in a plasma chamber using the masking pattern layer as an etch mask, a polymer layer being deposited over the inner wall of the plasma chamber during the etching;
wherein an intermediary cleaning process is performed in the plasma chamber between the etchings before the deposited polymer layer reaches such a degree as to induce lateral etching on the next film to be etched.

(Emphasis Added).

Applicants respectfully assert that *Qian* does not teach or otherwise disclose at least the features/limitations emphasized above in claim 1. For example, *Qian* discloses or teaches the cleaning is performed during etching a single substrate, rather than between etchings of substrates. Moreover, *Qian* does not disclose or teach a cleaning process that is performed before the polymer layer reaches such a degree as to induce lateral etching on the next film to be etched. For at least this reason, Applicants respectfully request that the rejection of claim 1 be removed and that claim 1 be allowed. As claims 2, 4-5 and 8 are dependent claims that incorporate the limitations of claim 1, Applicants respectfully request that these claims also be allowed.

Rejections under 35 U.S.C. 103

The Office Action indicates that claims 3, 6 and 9 are rejected under 35 U.S.C. 103 (a) as allegedly unpatentable over *Qian* in view of *Zhong* (U.S. 6,127,927). Applicants respectfully traverse the rejection.

In particular, Applicants respectfully assert that the combination of *Qian* and *Zhong* is legally deficient for the purpose of rendering claims 3, 6, and 9 unpatentable, because the combination does not teach or reasonably suggest at least the features/limitations emphasized above in claim 1 as lacking in *Qian*. That is, *Zhong* does not teach or reasonably suggest these features/limitations either. Since claims 3, 6, and 9 are dependent claims that incorporate the features of claim 1, Applicants respectfully assert that these claims are in condition for allowance. Additionally, these claims recite other features that can serve as an independent basis for patentability.

CONCLUSION

In light of the foregoing, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

No fee is believed to be due in connection with this response. If, however, any fee is due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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